$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe or Co, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Cu, Ni, Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions.

14. (Twice Amended) A composite material comprising a porous body portion comprising a mixed conducting oxide, and a film portion including a dense continuous layer of a mixed conducting oxide formed on said porous body portion, wherein

said porous body portion comprises a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe, the molar number of Co being within the range of 0% to 10% of the total molar number of Fe, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the

range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions.

19. (Amended) A method of producing a composite material which comprises a porous body portion including a mixed conducting oxide, and a film portion including a gastight dense continuous layer of a mixed conducting oxide formed on said porous body portion, said mixed conducting oxide of said porous body portion comprising a mixed conducting oxide expressed by the following general formula (2):

$$AFe_xO_{(3-\delta)} \qquad (2)$$

where $0.98 \leq x \leq 1.02$; A represents one or a combination of elements selected from the group of Bs, Sr, and Ca; and δ represents a value which is so determined as to meet charge neutralization conditions,

wherein said porous body portion is subjected to a heat treatment, the maximum temperature not to exceed 1400°C, and said dense continuous layer is subjected to a heat treatment, the maximum temperature for which is lower than the maximum temperature for said porous body portion by 20°C or more.

20. (Amended) A composite material comprising:

a porous body portion comprising a mixed conducting oxide, and a film portion including a dense continuous layer of a mixed conducting oxide formed on said porous body portion, wherein said porous body portion comprises a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe or Co, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Cu, Ni, Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions; and wherein said dense continuous layer is made of a ceramic of a mixed conducting oxide having its composition expressed by the following general formula (3):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_y\}\ O_{(3-\delta)} \qquad (3)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Fe and Co,

B' represents one or a combination of elements selected from the group of Cu, Ni, Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.2$;

$0.98 \leq x + y \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions.

22. (Amended) A composite material comprising:

a porous body portion comprising a mixed conducting oxide, and a film portion including a dense continuous layer of a mixed conducting oxide formed on said porous body portion, wherein said porous body portion comprises a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and

lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe, the molar number of Co being within the range of 0% to 10% of the total molar number of Fe, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions; and wherein said dense continuous layer is made of a ceramic of a mixed conducting oxide having its composition expressed by the following general formula (3):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_y\}\ O_{(3-\delta)} \qquad (3)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Fe and Co,

B' represents one or a combination of elements selected from the group of Cu, Ni, Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.2$;

$0.98 \leq x + y \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions.

24. (Amended) A composite material comprising a porous body portion comprising a mixed conducting oxide, and a film portion including a dense continuous layer of a mixed conducting oxide formed on said porous body portion, wherein said porous body portion and

said dense continuous layer is made of a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe or Co, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Cu, Ni, Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions.

35. (Twice Amended) A composite material comprising an oxygen exchange layer disposed on one side or two sides of an oxide having oxide ion diffusivity and porosity from 20% to 80%, wherein said oxygen exchange layer comprises an oxide expressed by $La_uSr_{b-u}Fe_vCo_{c-v}O_{3-w}$,

wherein $0.1 \leq u < 0.5$, $0.9 < b < 1.1$. $0 < v < 1.1$, and $0.9 < c < 1.1$., and is of different oxide composition than said oxide having oxide ion diffusivity.

41. (Twice Amended) A method of making a composite material for the separation of oxygen from a mixed gas, comprising: providing a porous body portion comprising a mixed conducting oxide, wherein said porous body portion comprises a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and Ga, B always containing Fe, the molar number of Co being within the range of 0% to 10% of the total molar number of Fe, the sum of the molar numbers of Cr and Ga being within the range of 0% to 20% of the total molar number x of B;

B' represents one or a combination of elements selected from the group of Nb, Ta, Ti, and Zr, B' always containing Nb or Ta, the sum of the molar numbers of Ti and Zr being within the range of 0% to 20% of the total molar number y and B';

B″ represents one or a combination of elements selected from the group of Zn, Li, and Mg;

$0.8 \leq a \leq 1$; $0 < x$; $0 < y \leq 0.5$; $0 \leq z \leq 0.2$

$0.98 \leq x + y + z \leq 1.02$; and

δ represents a value which is so determined as to meet charge neutralization conditions; and

forming a film portion including a gastight dense continuous layer of a mixed conducting oxide on said porous body portion, wherein the maximum sintering temperature for said mixed conducting oxide of porous body portion is greater than the maximum sintering temperature for said dense continuous layer.

42. (Twice Amended) A method of making a composite material for use as a chemical reactor, comprising: providing a porous body portion comprising a mixed conducting oxide, wherein said porous body portion comprises a ceramic composition as a mixed conducting oxide in perovskite structure, said composition being expressed by the following general formula (1):

$$\{Ln_{1-a}A_a\}\ \{B_xB'_yB''_z\}\ O_{(3-\delta)} \qquad (1)$$

where Ln represents one or a combination of elements selected from the group of Y and lanthanoids;

A represents one or a combination of elements selected from the group of Ba, Sr, and Ca;

B represents one or a combination of elements selected from the group of Co, Fe, Cr, and